ABSTRACT

The broader intention of this article is to present a methodological framework for working towards sustainable built environments in contexts that are characterized by rapid growth, change and urbanization. The article aims to contribute to this intention by examining the interaction between theory and practice of urbanism through analyzing a specific case - metropolitan plan for Rawalpindi-Islamabad area by the Greek architect/planner C. A. Doxiadis - in the light of the emerging discourse of sustainable urbanism. In analyzing the case of Islamabad, the idea is to see whether the historical development of its plan (1959-63) had any sustainability agenda embedded in its spatial articulation? And whether reinterpreting that agenda, and its original metropolitan framework, can lead to understanding and imagining new prospects that allows working towards a more sustainable built environment? More importantly, the article attempts to examine and reflect upon the capacity and ways in which urban design and planning approaches and strategies deal with the issues of sustainability in the production of the built environment. The article addresses these intentions and aims through three stages of analyses: i) the evolution of the sustainability paradigm and within that the emergence of the nascent discipline of sustainable urbanism; ii) the historical development of the plan of Islamabad and its distinctive aspects in terms of sustainability; and iii) the formulation of a design and policy framework for developing Islamabad-Rawalpindi area towards a more sustainable built environment. Within these analyses, several arguments and findings are linked in developing a case for reimagining urban form as a factor of sustainability that is not only a contemporary concern in the sustainability debate but also embedded in the spatial articulation of the historical plan of Islamabad. For understanding the sustainability prospects through such reimagining, a conclusion is drawn that the making of the plan of Islamabad unfolds a synthesis-based approach to urban design in constituting a metropolitan framework that facilitate a coherent urbanisation process, comprehensible built-form, architectural variety and a symbiotic relationship with the surrounding landscape. Theorising this framework and its key themes that are identified, allows one to comprehend the ‘anthropocentric managerialism’ based approach towards sustainability, with several elements that imply a precursor to sustainability discourse and a preamble that is being reincarnated as ‘landscape’ and ‘ecological’ urbanism. Theorizing such themes alone, however, is necessary but not sufficient condition for unfolding sustainable built environment. In this regard, several shortcomings are identified that contradict the sustainability credentials in the implementation of the plan together with the adoption of an integrated and transdisciplinarity-based approach in formulating design and policy strategies that allow working towards a more sustainable built environment in the Rawalpindi-Islamabad metropolitan area.

1. INTRODUCTION

There is growing awareness of sustainability issues that are manifest themselves on many fronts in society (Knox 2011). Signalled and set in motion through the environmental movement over the last 4 decades, apocalyptic events (ozone holes, Chernobyl, melting polar icecaps, climatic instabilities, tsunamis, etc.), alarming pace of urbanisation (70% urban world by 2050), acknowledged by scientific evidence (IPCC, etc.), the issues of sustainability have become the centre stage in global development consciousness. They are discussed and debated across disciplinary fields in academia, practice, politics, civil society, governments i.e. they have become the concern of the world community at large. Within these discussions, consensus has emerged on goals: achieving a global ecological equilibrium as a very question of survival of humanity on this planet [Ingersoll 2006; Farr 2008; UN-Habitat 2009; Lehman 2010]. Means to achieve this goal are however contested and disputed. Clear evidence has emerged also on the fact that built environment (from hamlets to mega-cities and infrastructure, see section-1) contributes

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to most, if not all, of the emissions leading to climate change (Ruano 2000; Farr 2008). There is also a consensus on the need for systemic change in the processes underlying the production of the built environment (Droege 2008). Comprehending such a change is clearly beyond the scope of a single discipline, scale or dimension. This is why there is a lot of theoretical confusion and methodological fragmentation in the design fields dealing with sustainability issues related to the built environment, and the very idea of sustainable architecture and urbanism remain a ‘contested’ concept (Guy 2001).

This article starts from the premise that built environment and sustainability relationships are complex, multi-dimensional and multi-scalar and that their understanding requires inter and transdisciplinary approaches (Mahsud 2010; 2010a; 2010b; and 2011). From this premise, the intention of this article is to present a methodological framework by examining the interaction between theory and practice of urbanism through analyzing a specific case in the light of the emerging discourse of sustainable urbanism (Farr 2008) as a ‘way’ of understanding and working towards sustainable built environments (SBE). Such a way is grounded in the broader theoretical discourse about sustainability from an urbanistic perspective (section-1), enriched by historical-empirical findings from a case (the plan of Islamabad, section-2) and operationalized by proposing concrete design and policy strategies (section-3) that facilitate the unfolding of a more SBE in the Rawalpindi-Islamabad metropolitan area. Underlying the analysis in these three sections is also the concern to examine and reflect upon the capacity and ways in which urban design and planning approaches and strategies deal with the issues of sustainability (such as, urban sprawl, economic growth, socio-spatial and environmental cohesion) in the production of the built environment.

Formulating a theoretical and methodological premise for discussing and conceptualising the idea of working towards SBE is the aim of the first section. This aim is pursued by examining the relationship between the evolution of the sustainability paradigm and the role of the built environment, and within that, the question of urban form and the emergence of the nascent discipline of sustainable urbanism. The analyses intend to clarify the connections between sustainability paradigm and the built environment through the lens of urbanism and urban form as a way of conceptual working towards SBE. These analyses are framed by addressing a set of questions: i) What are the internal contradictions and paradoxes within the paradigm of sustainability? What is the position of built environment and the role of urbanism in that paradigm? What are the scientific and theoretical tenets of the discipline of sustainable urbanism? What are its main concepts and prescriptive recipes? What is the value of re-imagining urban form as a framework for working towards SBE? Within these analyses, a series of assertions are made to make the case for reimagining urban form as a factor of sustainability, which implies bringing together the ideas and strategies of sustainable urbanism and models of urban form within a single ‘framework’ as a way of working towards SBE.

The second section examines the plan of Islamabad (Rawalpindi-Islamabad metropolitan area for 3 million inhabitants) by the Greek architect/planner C. A. Doxiadis as a case in the light of the emerging discourse of sustainable urbanism, and see whether the plan had any sustainability agenda embedded in its spatial articulation? And whether reinterpreting that agenda can lead to understanding and imagining new prospects that allows working towards a more SBE? The focus of analyses is the historical development of the plan (1959-63), in particular the re-imagining of urban form embedded in its spatial articulation (Mahsud 2008; and 2010), with a view to unfold its distinctive design aspects in terms of sustainability. These analyses provide a historical-empirical base for developing the (above mentioned) framework of working towards SBE, and are guided by addressing a set of questions: What is the significance of Islamabad as a case of reimagining urban form that is still relevant today for the context? How the plan deals with urban ‘growth and change’? What is the role of the reflections and reformulations in the making of the plan? How such reformulations lead to significant spatial concepts (and Ekistics theory) that acted as precursor to the sustainability discourse? What is the urbanistic value (idea of urbanity, urban form, new spatial concepts) of the plan in terms of urban design and planning approaches to sustainability?

Reimagining of urban form in the case of Islamabad owes not so much to what it has become today as a metropolis, rather it is embedded in the making of the plan that is analysed here as a case. A case that illustrates an attempt to devise a framework for growth and change that is particularly relevant for the context of explosive urban sprawl that characterise much of the sub-continent even today. Moreover, it is a case that offers a view on new sets of relationships between the old and new parts of the city and between city and the surrounding landscape. It is precisely such a kind of case-based learning through design-based research - deriving lessons from urbanistic experiments of the past that demonstrates the interaction between theory and practice -
that would add an empirical dimension in the efforts for developing the theory and practice of the discipline of sustainable urbanism. Such an argument is substantiated in the last parts (2.2 and 2.3) of the second section by discerning and interpreting the four distinctive aspects of the plan (section 2.2.1 – 2.2.4) as a way of reimagining urban form and as generic design and planning strategies for making a framework that facilitates the unfolding of coherent metropolitan growth over a period spanning as many as four to six generations. Renewed optimism in the possibilities of such a framework resonates in current trends such as ‘Landscape Urbanism’, ‘New Urbanism’, and other ‘Green’ design agendas.

In contrast to the insights and potential contribution of the historical making of the plan and its spatial articulation, its materialisation has developed serious shortcomings from the aspect of sustainability. While taking a stock of these shortcomings in the ‘past’ and other significant sustainability issues that were not addressed in the historical making of the plan, the third section makes the attempt to formulate a normative synthesis for the ‘future’. The intention behind the synthesis is to combine the ‘past’ shortcomings and (the reinterpreted) distinctive design aspects in the historical making of the plan (second section) with the theoretical assertions (made in the first section) in order to understand and imagine prospects for working towards SBE in an integrated metropolitan framework for Rawalpindi-Islamabad area. These prospects are translated and presented as conclusions in the form of design and policy recommendations for developing an ‘Integrated Metropolitan Plan’ (IMP) for Islamabad-Rawalpindi Region. They are organized under four flags (3.1-3.4), which represent a thematic reflection on integrated ways of working towards a sustainable metropolis of the future.

2. SUSTAINABILITY PARADIGM, BUILT ENVIRONMENT AND THE QUESTION OF URBAN FORM

The concern of this section is to formulate a premise based on a set of assertions for discussing and conceptualizing the idea of working ‘towards sustainable built environment’ (SBE). To start with, the first assertion made is that sustainability is too broad a concept, and built environment too complex to comprehend within a single conceptual framework.

On one side, the term sustainability or sustainable development implies striking a balance between the environmental, social and economic processes to unfold a kind of “development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (WCED 1987). On the other side, the term ‘built environment’ refers to the result of the alteration processes of the natural environment (space) by human activity (from agricultural production to planned organization of space through design, construction, management and different uses), ranging in scale from hearths to cities, which also includes supporting infrastructure, water and energy networks (Mahsud 2011). In this sense, the working ‘towards SBE’ would, first and foremost, imply focusing on finding and conceptualizing ‘ways’ whose general target in such alteration processes is enhanced sustainability and resilience of the built environment. Such ways can very well range from innovation in economic activity, social relations, industrial processes, and modes of consumption to land-use and their governance, and whose effects can very well be multi-scalar and multi-dimensional. The question of working towards SBE then is: how to comprehend such ways as to their effects in the built environment allows unfolding SBE? With this the second assertion:

The conceptual challenges of working towards SBE are multi-dimensional and complex.

Since the introduction of the concept in 1987 (WCED 1987), there has been a proliferation of competing notions of what sustainability is to the extent that it has become an empty box, a fragmented concept: sustainability is what you make of it. At best, it is qualified as an integrative framework (UNCSD 2009). With respect to the built environment, different disciplines (planning, design, geography to social sciences) have produced a multitude of competing notions of sustainability in relation to the use, production and consumption of space and resources in the built environment. Some focus on the performance aspect of systems (proliferation of sustainability measurement indexes, eco-labels, etc.), others qualify the ethical dimension as central to the sustainability debate, and yet others look at design, policy, technology and management as the proper arenas for dealing with sustainability in the built environment. Even just listing the multitude of these competing notions is beyond the scope of a single article or even a book. Surrounded and conditioned by much of the confusion and ambiguities created by this multitude, ‘sustainable’ architecture and urbanism is increasingly being acknowledged as a ‘contested concept’ (Guy, 2001). Therefore, the intention of this section is not to define what sustainability is, but – third assertion – to clarify the connections between
sustainability paradigm' and the built environment through
the lens of urbanism and urban form as a way of conceptual
working towards SBE.

From a broader paradigmatic perspective, sustainability is
seen as emerging out of the previous half century
Environment-Development politics as a brokered synthesis
by international institutions. Besides its oft-cited definition
by the World Commission on Environment and Development
of 1987 (see above), several key texts and international
conventions are cited in the evolution of the sustainability
discourse. A shared understanding of sustainability within
this perspective implies economic growth together with the
protection of environmental quality and social well being,
each reinforcing the other. In essence, sustainability calls
for a stable relationship between human activities and the
natural world, which does not diminish the prospects for
future generations to enjoy a quality of life at least as good
as our own. Hailed as a paradigm shift in geo-political
consciousness that promises to reform the western industrial
elite from inside out, sustainability has become the
"esperanto" of government agencies and religious systems
unfolding a "new enlightenment" (Mark 1999, 2003). In
this new enlightenment, one discourse is becoming dominant
– that is spread through most international media, actors,
institutions, conventions, texts, etc. - that communicates
the need for an ecological revolution (Ingersoll 2006; Rompaey
2009); a combination of visions and perspectives that point
to the need for a change towards a sustainable ecological
equilibrium in human activities. This 'new' discourse implies
a paradigmatic shift from the 'old' optimistic modernist
discourse that is based on the ideas from the 'old'
enlightenment, and which states that humans can conquer
nature, that history is a straight positive curve, and that
technology is our savior when things go bad (Rompaey 2009).
However, the transition from one dominant discourse
to the next is a gradual evolution and must not be viewed
as a black and white opposition, rather a field of tension and
ambivalence. Intermediate positions, views and perspectives
characterize such a field. For example, on one side there are
the sustainability skeptics (Heartfield, 2008), critics (Mark
2003; Pyla 2008), disciplinary orthodox, climate centrist,
cultural essentialist, traditionalists (Citta slow, krierstad,...)
and so on. On the other side, there are the adherents of
hybridism and managerialism that promote transition
management, governance, 3P / 3E, and sustainability as an
"integrative framework" (Mahsud 2011; UNCSD 2009). It
is these views and perspectives between the two discourses
that structure, articulate and evolve the sustainability
paradigm. Therefore the fourth assertion is:

Sustainability is not a set of static values or dimensions that
needs to be satisfied or brought in equilibrium in a 'once
and for all way', rather it is a continuing social construction,
a dynamic and evolving paradigm that is influenced by a
multitude of broader societal forces, views and perspectives.

Within this broader and evolving nature of the sustainability
paradigm, however, there is an urgent need for sound
theoretical work on linking the critical position of the built
environment / urban organization at large with that of the
role of related design fields (architecture, urbanism and
planning). On one side, unsustainable patterns of urbanisation
are identified as the most important challenge for the 21st
century demanding change in urban design and planning
practices (UN-Habitat 2009). On the other side, the ensuing
scientific research on sustainability, however, continues to
focus mainly on the issues of global-molecular level (Climate-
change, Green-house-gases, etc.) and related techno-scientific
fixes, and tends to skip over the durable and deterministic
attributes of design related to the built environment (buildings,
towns, urban areas, infrastructure, etc.) and their multiscalar
effects (Mark 1999; Ruano 2000; Ingersoll 2006; Farr 2008).
The alarming pace of global urbanisation (30% in 1950,
50% in 2010 and 70% by 2050) and the consequences of
the urban space consumption per capita at the micro-scale
on the meso and macro scales (sprawl, emissions, energy
and social risks) have fed a consensus (Ingersoll 2006; UN
2010; Pont 2010). The fifth assertion is:

The sustainability question is intimately tied with the urban
question.

The correlation between resources (energy, material, etc.)
consumption and concentration of urban area (form), and
the question of providing water, transport and waste
management infrastructure in a sustainable way – the sixth
assertion - intimately ties the question of urban sustainability

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1 Paradigm can be understood as a platform of theoretical ideas, a conceptual model, a worldview underlying the theories and methodology of a particular scientific subject, a particular philosophy of life or conception of the world.

2 The WCED report is also called as Brundtland report, named after the chair-woman of the commission, Gro Harlem Brundtland.

3 They range from Rachel Carson’s Silent spring (1962), Barbara Ward’s Spaceship Earth and the club of Rome declaration (1972) to Rio conference (1992), UN Framework Convention on Climate Change (1994) and the Kyoto protocol (1997).

4 In the European context, the situation is even more alarming: 83% of the European population will be urban by 2050, urban sprawl expands faster than population rise - 8000 km² land [size of Luxembourg] became urbanised in just 10 years (1990-2000).
to that of its form and design. This implies the need for –
the seventh assertion – the sustainability question to be asked
in terms of urban life, and developing new / more sustainable
ways of conceiving the design of the future built environment
(Williams 2000; Jenks 2005). This is a concern that has
characterised the green and ecological consciousness within
the disciplines of architecture and urbanism, which is brought
– in a more comprehensive way – together as a foundation
for developing the nascent field of sustainable urbanism.

2.1 Sustainable Urbanism: A Discipline in Pre-
Paradigmatic State

The ambition of the nascent discipline of sustainable urbanism
is to combine environmentalism and urbanism for unfolding
SBE (Adriaens 2005; Farr 2008; Lehman 2010). This implies
sustainable urban development as a new economic base that
will usher an era of green development. Sustainable urbanism
as a discipline is legitimized for meeting the challenges of sprawl, GHG-emissions, transcending
functionality, achieving higher spatial quality and creating
sense of place and identity (Farr 2008; SUD 2005; Delgado
2005; Naison 2009). Aiming at “a comprehensive reform
of the built environment” through a “more human-powered
and less resource-intensive life-style” (Farr 2008), sustainable
urbanism however relies mostly on traditional patterns, sub-
urban and isolated initiatives as examples (TPF 2007).
Moreover, it promotes the realisation of green buildings,
neighbourhoods, transit-oriented-developments, and
communities of different sorts without scaling their effects
in relation to urban form (Frey 1999; Jenks 2005; Ingersoll
2006; Robert 2008). Several manifestoes and generic
attributes are bestowed upon sustainable urbanism – New
/ Eco / Green urbanisms, low-rise, high-density, mixed-use,
mixed-tenure and energy efficient development etc. – without
engaging critics, and advocates of cultural essentialism,
traditionalism, hybrid, and evolving sustainability attributes
(William 2000; TPF 2007; Heartfield 2008; Edwards 2001;
Williamson 2003; Guy 2008). Furthermore, conclusions are
drawn, such as, “no viable model for sustainable planning
exists in the world” (DCF 2009). This lack of contradiction
and the drawing of exaggerated conclusions points to a lack
of theoretical maturity of the discipline of sustainable
urbanism. It represents a state of pre-paradigmatic confusion,
reflected in the ameliorative critique that argues for a
multiscalar, inter-disciplinary approach for
its theoretical and epistemological restructuration (Mahsud
2010a; and 2010b).

Addressing the lack of theoretical maturity of the sustainable
urbanism discipline is a complex endeavour precisely because
of the complexities of the scale and variety of urban forms
in different contexts, and the intimate interweaving of
environmental, social and economic issues (Jenks 2005).
On one side, sustainable urbanism continues to mainstream
the ‘optimal size’ bias and an obsessive focus on green
buildings and isolated/sub-urban neighbourhoods with little
attention to provide a framework grasping their multi-scalar
effects. While seeking a scientific and epistemological base
in ecological theory, sustainable urbanism remains entangled
between the main lines within ecological debate, such as
deep ecology, green ecology and social ecology (Ingersoll
2006). On the other side, the research on urban form in
relation to sustainability has been marginal – considering
urban form as too vague a concept, and thereby, more focus
on the building scale – and fragmented between advocates
for compact, polycentric and of open / green city models.
These models represent a sort of ‘one size fits all’ solutions,
believing their adoption would unfold SBE. Transcending
such an approach is necessary for achieving theoretical
maturity of the discipline, which means developing new
conceptual and methodological frameworks for assessing
the performance of urban form and identifying the right
scales and strategies for multi-scalar restructuring of urban
system (Jenks et al. 2005; Adriaens 2005; Moutaert 2010;
Lehman 2010; Mahsud 2010b). This implies bringing together
the ideas and strategies of sustainable urbanism and models
of urban form within a single framework for mapping their
multi-scalar relationships, so that right scales and strategies
can be identified for working towards SBE. Neither the
global processes nor the building scale alone as a focus,
theorising such a framework demands a scale-sensitive focus
on reimagining urban form as a factor of sustainability.

2.2 Reimagining Urban Form as a factor of sustainability

Urban form encompasses physical layout, morphology,
design, and the three-dimensional character of the urban
fabric. It manifests different configurations of urbanistic
features (land-use, density, public space, infrastructure) and
articulations (grid, linear, radial, hybrid) that are influenced
by spatial forces underlying urban growth and development
[Mahsud 2010a]. Such a complexity in the notion of urban
form is further complicated by the existing urban situation
where it is hard to define or even distinguish what is urban
i.e. urban / city, its periphery and rural / countryside have
merged together in forming an urban field (Ingersoll 2006).
New districts no longer lie on the edge of the existing urban
complex, but are amalgamated into a much wider and more
diffused configuration (Adriaens 2005). Neither
comprehendible nor sustainable, the present urban situation
has unfolded an upsurge in scientific research on rethinking
the concept of urban form and devising new models for the restructuring of urban systems. Such a research has unfolded along four main lines: Compact city – based on higher densities that emerged from the EU green paper (1990); Green city – advocating the primacy of environment [green and blue networks] in structuring urban form [Ruano 2000; Lehman 2010]; Polycentric city – arguing for the primacy of regional framework and a polycentric structure in organizing the urban landscape (Jenks 2005; Knox 2011); and Just and Socially Cohesive city – advocating the primacy of social innovation, environmental justice and politics of urban ecology for restructuring the urban form (Moulaert 2000 & 2010; Fainstein 2010; Heynen 2005). On one side, however, there are increasing disagreements amongst the advocates of different models (Brehney 1993; Frey 1999; Jenks 2005; Droege 2007) and the continued lack of differentiation in the notion of urban form (Mattias 2008).

On the other side, a consensus can be discerned in the analytic and conceptual rethinking of urban form along the lines, such as: the relative autonomy of urban form is not an absolute one i.e. urban form should not be understood / conceptualised as a priori form, but as a resulting system capable of organising parts of the urban territory in a dialectical way (Panerai 2004); urban form is not a physical entity alone that is amenable to analysis and intervention but rather a perpetually organising field of forces (economic, social, etc.) in movement, capable of self regulation, innovation and adaptability at different spatial scales (Kwinter 2010).

From the foregoing, it can be deduced that urban form is a dynamic field shaped by spatial forces that are inter-related and interdependent at several scale levels producing multiple relationships and effects (Jenks 2005; Knox 2011). Comprehending the sustainability of such relationships and effects involves re-imagining and evaluating the performance of urban form in terms of sustainability, which requires a multi-scalar approach (Mahsud 2010b). Re-imagining urban form as a factor of sustainability is crucial for: i) efficient provisioning of services, infrastructure and energy, and maintaining a clearer visual and spatial order of the built fabric and open space / agricultural landscape (Ingersoll 2006); ii) for cohesive and integrative distribution of urban fabric within a city or region, which is decisive for the spatial quality that can be achieved (Pont 2010); iii) for unfolding new patterns of space within cities and regions, which could allow preservation of good agricultural land, prevention of urban sprawl, protection of countryside, and facilitate the accessibility and liveability of urban environment (Jenks 2005; Pont 2010); iv) configuration of cities tend to be very long lived, but building may be replaced more frequently, and that form of urban areas and buildings within them don’t determine sustainable behaviour, but they might provide the right settings for it (Jenks 2005). It is in this context that the historical development of the plan of Islamabad becomes interesting as a case that represents a different but relevant re-imagining of urban form.

3. THE CASE OF ISLAMABAD

Re-imagining urban form in the case of Islamabad owes, mainly, to dealing with a particular ‘context’ and illustrating the urbanistic ambition for an ‘optimum urban settlement of the future’, which are both relevant for drawing lessons for working towards SBE. Explosive growth, urbanization and modernization euphoria of the 1950s-60s that characterized the context within which Islamabad project was conceived has not gone away; most of the sub-continent is still experiencing high rates of growth and urbanization in comparison with European and North American contexts where they have significantly lowered. Doxiadis’ ambition to design Islamabad as a ‘City of the Future’ (COF) has also become more relevant due to the challenges of sustainability that is fuelling a renewed interest and ambition in exploring ideas and alternative futures for urban organization at large. The plan of Islamabad becomes interesting as a peculiar combination of theory and practice, mediation of agendas (political, economic, developmental, see 2.1), preservation and enhancement of the landscape in a context of thriving metropolitan growth frenzy (Mahsud 2008). Moreover, it is also relevant for Doxiadis I claim that the frame for the capital metropolitan area he has created would last for centuries, and the fact that its making is based on an enormous scale of architectural / planning efforts i.e. over 4000 drawings and 8000 pages of text (DA 1960). The contextual conditions, ambitions and agendas led Doxiadis to propose a plan for the specified area (3626 sq. km, see Figure 1) that conceives a modern metropolis of 3 million

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5 Doxiadis formulated COF as a theoretical project with the aid of Ford Foundation (FF) for “cross cultural training in urban planning” by using the opportunity created by the new capital project to demonstrate and develop a methodological framework for the design of an optimum urban settlement of the future. Islamabad offered Doxiadis a favorable juncture of circumstances - assembling an international team of interdisciplinary research experts at FF’s expense, and pursue the ambition to enlarge the scope of architectural modernism to the international development and postcolonial context characterized by Cold war politics and modernization euphoria – to rethink modernism and develop a certain view about the future of urban organization at large. For an overview of the conception of the COF project based on correspondence between Doxiadis and Ford Foundation, see Mahsud 2008, pp. 138-149.
inhabitants by the year 2000 and is composed of four components: the new capital, a national park, the existing city of Rawalpindi and the surrounding hinterland. In the Master Plan (1165 sq. km, see Figure 2), each component was defined to have a distinct as well as a mutually beneficial role in unfolding the metropolitan focus of a new country.

Figure-1: Federal Capital Commission, Location of Islamabad, 1959, Area specified for the creation of the new capital next to Rawalpindi city on the historic grand trunk road. Source: Socio-economic survey, GOP (1960), p. 2; DA (Bulletin 64), p. 1.

Figure-2: Doxiadis, Final Master Plan for Islamabad, 1960. Source: DA 1960, CDA-A (Capital Development Authority Archives, Iqbal Hall, G-6, Islamabad).
but an old nation (Mahsud 2007).

Fifty years ago the main lines of Doxiadis’ Master Plan for Islamabad were being laid out on the landscape that has become today the symbolic focus of the national life. Over the last fifty years, the city has not been static. It has been dynamic; constantly changing, growing and evolving in its architecture, urban spaces, socio-cultural, economic and political life as well as the citizen’s discourse about the city (Mahsud 2011a). The extra-ordinary achievement of the plan is that it provided a flexible spatial framework for this gradual evolution towards becoming a metropolis of the future. This framework for growth and change is the illustration of Doxiadis’ ideal COF. Embedded in the framework is the idea that size and scale of the city cannot be fixed. Rather it is the trajectory of growth and change and its relation to the surrounding landscape (Margalla hills and national park in the case of Islamabad) that can be designed. Such an understanding of design did not exist at the outset, rather it developed and evolved in the process of the making of the plan that spanned over four years (1959-63). This understanding of design through reflections and reformulations in the making of the plan led Doxiadis to stretch the notions of City and Future beyond their previous limits (Mahsud 2010).

Doxiadis introduced the spatial concepts of Ecumenopolis (see Figure 3) (representing the future city of the inhabited globe) and Ecumenokepos (the natural environment as a global garden). Their harmonious coexistence at various scales is his vision for global urban organization and urbanism (see Figure 4), of which the case of Islamabad is claimed as the best illustration at the metropolitan scale (Doxiadis 1965). Development of such a vision of urbanism illustrates the transformation of the modernist ideas about the city, urbanity and the built environment (Mahsud 2007a). Behind such transformation was the ambition to reform the theory and practice of modern architecture and urbanism that Doxiadis advanced through his self-proclaimed science of human settlements as Ekistics (the science of human settlements): outlining a scientific, interdisciplinary and global urbanism meant to combine development with environmental protection and look at the issues of settlement
design and planning from a holistic perspective (Doxiadis 1968; Mahsud 2008; and 2010). In such an urbanism, the concepts of ‘scale’ and ‘time’ are central for dealing with issues of growth and change. While Ebenezer Howard and Le Corbusier (inventors of the Garden city and the Modernist city ideas, respectively) focused on Tomorrow, Doxiadis focused on the dynamics of growth and change, incorporating them each into the design problems of ‘scale’ and ‘time’, which, in turn, led to his concept of Dynapolis (a dynamically growing city). This concept is both descriptive and prescriptive—as are most of his other concepts—showing his peculiar blend of theory and practice. Considering cities growing organisms, Dynapolis qualifies “the optimum speed of growth” of the city and its “relationship to the total space around it” as the central questions for development and design practice i.e. plan-making (Doxiadis 1970; Mahsud 2010). While devising a certain metropolitan framework, the development of the Dynopolis concept in the making of the plan for Islamabad unfolds a synthesis based approach to urbanism (Mahsud 2011a).

3.1 Mediating agendas and development through urbanism: A framework for growth and change

Not so far from what the concept of sustainability as an integrative framework implies – to mediate social, economic and environmental agendas in a way that development remains sustainable – Doxiadis’ ambition in the making of Islamabad as a COF was to mediate various agendas through urbanism. Urbanism as a discipline at cross-roads [architecture, landscape architecture, urban planning] that encapsulates both the theory and practice of development was seen by Doxiadis as a synthesis field (Mahsud 2008). While accommodating political, economic, and technological agendas, urbanism was hoped to release the latent socio-cultural potential, a vital element in achieving development. In Doxiadis I believe, the emphasis on economic (production) aspect alone cannot achieve development. Rather, it is the mobilization of development dynamics through urbanism that he advances as ‘self-accelerating’, which releases expanding internal forces for further development (i.e. sustained development). With such an understanding of the capacity of urbanism, Doxiadis attempts to mediate several agendas in the making of the master plan that characterize the context surrounding the Islamabad project.

The genesis, conception and planning of the Islamabad project happened in a highly technocratic way under the aegis of the then new authoritarian regime of Ayub Khan (ruled. 1958-69). The project was conceived in the absence
of any democratic political representation or public participation. As such, the main stakeholders were the new regime, their appointed FCC (Federal Capital Commission), a host of advisors, the 14 committees represented by various government departments, and the chief consultants (Doxiadis Associates). Behind the conception of the new capital project, there was a peculiar ‘development euphoria’ of the late 1950s Pakistan as a context that was shaped and characterized by mutually intertwined agendas of several stakeholders and events: the need for a new capital for the state; several attempts to materialize a capital project in and around Karachi that did not realize; political instability in the first decade of post-independence Pakistan; lack of the political legitimacy of the new authoritarian regime of Ayub Khan; the US foreign policy interests amidst cold war; transformation of the planning board (1954) into a planning commission (1959) with the assistance of Harvard advisory group, and their conception of the first five-year development plan in which Doxiadis had been engaged as ‘housing and physical planning’ consultant since 1954. The regime of the then president Ayub Khan can be seen as the principal stakeholder in the Islamabad project, because the project was the outcome of their conscious political decision and part of their ambitious modernization and nation building agenda (Mahsud 2008). The broader political agenda of the regime was to install stability and order, re-invent and modernize the state, find legitimacy and represent unity of the nation transcending its discontiguous geography (Mahsud 2007). The project was imagined to be a reflection of the nation’s larger stance towards urbanism.

The Federal Capital Commission (FCC) can be seen as the main stakeholder since it was entrusted by the regime with the task of formulating the agenda for the new capital project that ranged from the selection of the site, to studies and surveys of its 14 committees (topography, climate, water, soil, transportation, health, education, administration, energy, housing, town planning, land use, building materials, economy, history, archaeology and architecture), and program and policies for the project. According to the FCC, the material provided to the consultant (Doxiadis Associates) for the making of the master plan had been ‘collected through investigations and studies made by almost 100 experts drawn from 46 different specialized agencies of the provincial and the central government’.

While studies and planning work was under way, the public announcement was made on 12 June 1959 of the specified area (3626 sq. km; Figure 1) on the Pothwar plateau next to the existing city of Rawalpindi. For the new capital project on this new site, the FCC formulated its agenda in the ‘classified’ document titled ‘Where there is no vision the people perish’ (a quote associated with King Solomon), which was based on the preceding six months of studies of the 14 committees, and internal deliberations and consultations with other members of the regime. The document was provided to the consultants (Doxiadis associates) as the client’s brief. The agenda in this document can be summarized as ‘entangled’ that suffers from ambivalence between tradition and modernity, besides carrying certain pragmatism.

For a detailed description and analysis of the regime’s agenda, see Mahsud 2007 and 2008. The FCC conceives the project as a ‘symbol’ for nation building with a “regional approach”, “climate”, “aesthetics” and a skeptical notion of “modernization” as main considerations (FCC 1959). The project was imagined to be a reflection of the nation’s larger stance towards urbanism.

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6 Doxiadis was engaged as advisor in February 1959 and subsequently appointed as consultant to the FCC in September 1959. His involvement in the Pakistani scene dates back to 1954; brought in by Harvard Advisory group as a consultant for the housing and physical planning chapter of the first five year plan, and later commissioned several projects ranging from village academies, education, infrastructure, housing and urban development in both east and West Pakistan. For more details, see Alexandros-Andreas Kyrtis, comp., Constantinos A. Doxiadis. Texts, Design Drawings, Settlements (Athens: Ikaros Publishing, 2006), 373-386; and Mahsud, “Constantinos A.,” 22-25 (see n. 2).

7 Constituting over 30 commissions (Federal Capital Commission – FCC - as one of them) within first 3 months, and establishing a full fledged planning commission as part of the president’s secretariat shows the eagerness to articulate the structure of a modern state. Ayub is modernizing ambitions have been credited by several scholars as “nation’s principal architect” by Lawrence Ziring, “From Islamic Republic to Islamic State in Pakistan,” Asian Survey 24, no. 9 (Sept. 1984), 935; “the de Gaulle of Asia” by George J. Lerski, “The Pakistan-American Alliance: A Reevaluation of the Past Decade,” Asian Survey 8, no. 5 (1968), 412; literally transformed Pakistan from an “ideological” to a “functional” state by Hussain Haqqani, Pakistan: Between Mosque And Military, (Washington D. C.: Carnegie Endowment for International Peace, 2005), 311; and Huntington extols him as “more than any other political leader in a modernizing country after World War II, Ayub came close to filling the role of a Solomon or Lycurgus or ‘Great Legislator’ on the Platonic or Rousseauian model.” Samuel P. Huntington, Political Order in Changing Societies (New Haven: Yale University Press, 1968), 251. For a detailed analysis of Ayub is modernization agenda, see Ahmed Zaib K. Mahsud, “Constantinos A. Doxiadis Plan for Islamabad: The Making of a ‘City of the Future’ 1959-1963” (PhD diss., Katholic University Leuven, Apr. 2008), 95-156.


9 For a detailed description and analysis of the regime’s agenda, see Mahsud 2007 and 2008.

10 Commission on Location of the Federal Capital (hereafter FCC), “Where there is no vision the people perish,” (President’s secretariat: Government of Pakistan, June 1959) 3, 10-11.
a catalyst of economic development, and a bridge between the local culture/tradition and the “imagined community” of the modern nation-state. The FCC prescribes the assimilation of local culture and common faith with a belief that its display would metamorphose the new capital into a “theatre of national culture and ideology” (FCC 1959). Though, ironically, Karachi being a cosmopolitan city already had become ‘a theatre for national culture’, but going to an interior location isolated from cosmopolitan influence reveals the intentions of seeking ‘purity’ i.e. the desire to construct a more ‘pure’ political climate. Besides, the location of the capital on historically important Grand Trunk Road (see Figure 1) is legitimized by continuation of tradition (Nilsson, 19730).

The FCC clearly spelled out that the capital would be a city of limited size (300,000 inhabitants), surrounded by green belts, orchards and separated from the existing Rawalpindi city (FCC 1959). In terms of the idea of urbanity, the regime sought an efficient, clean, hierarchically organized, climatically healthful, befitting environment for the functioning of the federal government (FCC 1959). The intention of incarnating the command and control center as an isolated ivory tower and an efficient environment with limited population reflects modernistic yearnings (reminding that of Brasilia). However, abandoning the newer colonial outpost (Karachi) and enshrining the political power in renewing the older part of the country unfolds the complexity of the encounter of modernism with a context that has been evolving an architectural and urban culture predating Greek city-states by almost two millennia (Mahsud 2008). Both the regime and FCC aspires the reincarnation of this tradition and calls for the capital to be representative of the new state that was argued, at the same time, an old nation (Mahsud 2008). While unfolding an emblematic analysis of British civil-lines and cantonments, the FCC asks for the design of an environment in which government functionaries “must identify themselves with the people they serve and at the same time, set a pattern of living which people respect” (FCC 1959). However, the means to pursue indigenous inspiration (new capital separated from Rawalpindi) becomes similar to the colonial strategy of locating civil lines and cantonments at a distance from the indigenous towns-cities (Mahsud 2007).

In the regime’s agenda, the eagerness to articulate the structure of a modern state prevails, representing a tremendous development potential. It is a context of fluidity; a new state immersed with post-independence crisis, uncertainty, chaos, several dynamics and a confusing situation i.e. it is not a crystallized system, not yet stable. Although, the regime gives an illusion of stability, but it is an opportunity that the engaged consultant (Doxiadis) realizes in developing something new in the sense of urbanism (Mahsud 2008). As the ambitions of the regime became clearer to Doxiadis through working with the FCC, he began to see the project as a perfect opportunity for advancing his agenda of making Islamabad a model for his ideal ‘City of the Future’ (COF).

In this process of working together – the FCC, 14 committees, members, advisors and the consultant, etc. - on the studies and deliberations about the new capital, several agenda’s (political, economic, social, spatial, etc.) began to be mediated. This process of mediation led to the conception and design of a metropolitan framework (and not an isolated capital city) for 3 million inhabitants in which the unfolding of a cohesive built environment over 4 to 6 generations became a central question. In this regard, several planning and design strategies were mobilized: capitalizing on the symbolic value of the new project; adjusting the future metropolis to the conditions and potentialities of the local landscape; institutional integration of the different functions for materializing dynamic development; enlarging the scope of the system of orthogonal axes to the metropolitan scale for devising the framework; rationalizing the pattern of movement, time and scale through reconceptualizing ‘center-periphery’ relations, and so on (Mahsud 2008).

First and foremost, the capital project for Doxiadis was a “political decision” that represents the greatest symbol of a nation state. Symbolic value of the new capital for him was its capacity to develop at best, a “new culture”, and at least, provide a beginning towards a new era for modernization, and surprisingly give paramount importance to the naming of the new capital. In this regard, the FCC organized a public survey of a few thousand people (limited mainly to government employees, prominent members of the civil society – businessmen, intellectuals, media persons, etc.) who were given a choice to select one out of four names: ‘Islamabad’, ‘Ayubabad’, ‘Muslimabad’, and ‘Jinnahpur’ (DA 1959). The public announcement based on the results of the survey was made in favor of ‘Islamabad’ by the cabinet on 24th February 1960. While the naming was underway, the plan making began with identifying the potentiality of the local landscape by documenting and analyzing the morphological elements of the physical environment of the area (existing city of Rawalpindi.

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infrastructure, Margalla hills and the several villages, see Figure 5). Several points of contention emerged between the FCC and Doxiadis in the plan making process. For example, Doxiadis showed empathy for the cultural landscape of existing village settlements and their architectural character, which the FCC considered of no value (Mahsud 2007). The local vernacular gave “unity” and “character” to the landscape that Doxiadis interpreted as ‘purity’ and ‘incorruptibility’. Whereas the contemporary architecture-culture of Rawalpindi city for him was “disorganized and chaotic”, showing a peculiar anti-city agenda.

Analysis of the local landscape was pivotal in the formulation of the two central axis and the external boundaries of the plan. Doxiadis derived the first central axis (SE-NW, 14 miles long and 400 yards wide) “Islamabad highway” from the historic G. T. Road, and crowned its tip with the grand mosque (see Figure 6). The second central axis (SW-NE) followed the deepest lines of the physical landscape (river

Figure-5: Doxiadis, Physical landscape of the capital area, 1959-60, Morphology of the Physical Landscape (upper left) and villages (bottom left) scattered over the area of the new federal capital (right). Source: DOX-PA 33, p. 25; DOX-PA 77, p. 229; DOX-PA 33, p. 7.

Figure-6: Doxiadis, main axes articulation, 1960. The two main axes: SE-NW crowned with Faisal mosque; and SW-NE for capitol complex location. Source: DOX-PA 77, p. 259.
valleys and parallel to the formation of hills), and at its end Doxiadis placed the capitol complex. Believing that a more enduring solution can be evolved if the boundaries are adjusted to the natural landscape features of the area, he chose the foot of Margalla hills in the north, the “Muree” hills in the northeast, “Ling” and “Sooan” rivers in the south-east as external boundaries. Whereas, the south-western boundary was a choice that suited his ambition; it is in the direction of the open plain with capacity to accommodate future expansion of his conceived dynamic growth. The two central axes — one derived from historical reference and the other mimicking the physical structure of the landscape — forms the skeletal frame that Doxiadis called the “urban nucleus” (Figure 7) of the federal area and clearly stated his ambition (COF) that “we are sowing seeds of a metropolis of the future” and that this frame would last for centuries (Mahsud 2007). For materializing dynamic development within the frame, Doxiadis proposed a three-fold institutional role for the new metropolis: the “regional”, “administrative”, and “cultural”. Besides these foundational functions, he argued that “subsidiary functions” (housing, trade, industry, education, etc.) enable the former to operate smoothly and rationally, although they are not subsidiary in themselves since they are the ones that bring a settlement into existence and secure its maintenance. Unlike the modernist model of Brasilia or even the regime’s insistence for an isolated capital, Doxiadis believed that combination of all four elements is equally important in a great capital and which completes it in its function as the country’s highest symbol.

The two central axes (SE-NW and SW-NE) and the external boundaries constitute a system of orthogonal axes that contained Rawalpindi, the new capital area located in the north, and the large national park in the north-northeast section (DA 1960a; 1960b). For cohesion in the early stages of development, both the new (capital complex) and the old (Rawalpindi) became the starting points for the expandable linear cores of Doxiadis’ twin-foci Dynapolis. Over the skeletal frame and the cores, a grid of 2,100 by 2,100 yards was laid out as the “modulus” and “building block” of the metropolis (see Figure 7, DA 1960c). This oversized grid—marking Doxiadis’ sector for 30,000 to 60,000 inhabitants is intended to provide historic continuity in the modern metropolis (Mahsud 2008). The distinctive design feature of this sector is the spatial variety achieved through integration and overlapping of the civic amenities and housing with the natural ravine (naalas) system (see Figure 8). All the citywide functions — commercial, residential, industrial, administrative, and even recreational — are grouped together at various scales in multiple linear spines capable of gradual extension, with their programmatic complexity regulated by the fixed size of the sector. The size and scale of the sector was meant to rationalize the movement of both pedestrian (within) and vehicular (outside) traffic in terms of time, generating a different conception of “centre” and “periphery”; both the sector (polis) and the city (metropolis) are traversable from their respective centre and periphery in the same amount of time (ten to twelve minutes) on foot and by car respectively. This owes to the size of the sector.

Figure-7: Main axes and other boundaries forming the skeleton, and the grid of 2100x2100 yards forming the sectors of the metropolitan area. Source: DOX-PA 77, p. 329.

Figure-8: Doxiadis, Model of central part of Islamabad, 1961. Blue area (CBD) flanked by two residential sectors (F-6 above, G-6 below), & the public buildings area facing the administrative complex. Source: DA-A (Doxiadis Archives, Benaki Museum, Athens).
and the design of highways without traffic lights or level crossings, enabling automobiles to travel at a speed of 100 miles per hour (DA 1960a).

Re-conceptualization the relationship of center to periphery in the organization of urban areas is at the heart of urban form discourse aimed at developing a framework for urbanization. In both Howard’s garden city and Le Corbusier’s modernist city, center and periphery are organized in the classical sense. In Doxiadis’ plan, the center and periphery are meant to grow interdependently in a linear and specific direction. That is the premise of his Dynapolis model, which advances an urbanism and urban form that neither adheres exclusively to the logic of the conservative garden city and neighborhood-unit paradigms, nor to the radical kind of CIAM/ modernist urbanism with its strict separation of functions and zoning based on isolated towers in the parks. It also rejects the notion of a linear city. Designed as a framework, the urban form in Islamabad’s plan illustrates the active unfolding of a city’s development. It promotes an urbanism that is low-rise, high-density, and mixed-use in a thick mesh continually extended into, but in a dynamic relationship with, the surrounding landscape.

Analogously, the urban form in Islamabad’s plan can be seen as a synthesis for developing a framework that is based on typological enlargement of the idea of a house (solid) and a garden (void) (see Fig. 2): it is the combination of two opposites—a city and national park of almost equal size, one solid and the other void—in which a dynamic relationship is promoted through a dual strategy of juxtaposition and layering. Iteration of such a relationship in a context of global urbanization and urban sprawl led to the conception of global spatial concepts of Ecumenopolis and Ecumenokepos (see Fig. 3 & 4), their theoretical elaboration through Ekistics (1968), and a distinctive form of urbanism that Doxiadis succinctly presented as his ideal in the illustration of Entopia (Doxiadis 1974, see Figure 9). Entopia (see also section 2.3) represents a future metropolitan Athens, a vast agglomeration structured by the penetration of nature into a variety of sectors. The old parts of the city are preserved, the new parts are kept in scale with the old, industry is located under a large park, and transportation is routed into conduits below greenways. Entopia has transcended capitalism’s cathedrals of commerce (skyscrapers) and has become a thick mesh with only community centers, in the midst of the sector, soaring above everything.

Figure-9: Doxiadis’ illustration [1974] of Entopia showing Greater Metropolitan Athens by the year 2121 A.D. Source: Doxiadis (1975), p. 254.

12 One represents the horizontal spread-out centre city surrounded by six garden cities [see Howard 1898; 1965]. The other proposed the “vertical garden city” [see Hilberseimer 1960]. However, both visions remain classical in their conception of centre surrounded by periphery [see Holston 1989; and Dunnett 2000].
else. Obedient to Aristotelian tenets, the city is humane, comprehensible, and in harmony with nature, a place where difference is celebrated and a variety of social and religious groups can coexist. According to Doxiadis (1968, p. 317), “In this city we can hope that man, relieved of all (the) stresses that arise from his conflict with the machine, will allow his body to dance, his senses to express themselves through the arts, his mind to dedicate itself to philosophy or mathematics, and his soul to love and to dream.”

3.2 Distinctive design aspects of the synthesis in the framework

The distinctive design aspects of Doxiadis’ plan are embedded in his synthesis for developing a framework aimed at guiding coherent metropolitan growth over a period spanning as many as four to six generations. According to my interpretation through research by design and detailed analysis (Mahsud 2007; 2008; and 2010) at several levels, this framework is informed by a four-fold synthesis of: 1) the historic and the modern city, generating the notion of the “historic city as a body of design knowledge”; 2) various scales of human association and the interaction between the grid and the built-form, producing the notion of “multiple scalarity”; 3) nature and the city, rural-urban continuum and their interdependence as a frame that breaks apart classical notions of urbanity; and 4) process design and open space system.

3.2.1 Historic city as a body of design knowledge

By eliminating isolated high-rise structures and allowing the coexistence of old (Rawalpindi) and new (Islamabad) parts of the city, Doxiadis’ urbanism brings the historic city (see Figure 10) to the fore as the context for modern urbanism. Attempts to preserve human scale and recover the intimacy

Figure-10: Islamabad’s sectors as the city of the past [left image, see the first 4 sectors inserted with plans of classical Athens, London, Paris and renaissance Florence]. Unfolding the metropolitan area through the multiplication and repetition of historic ‘polis’ in terms of size and scale, and the figure ground (right image) of historic Rawalpindi and the first residential sector of Islamabad (G-6) at same scale. Source: Doxiadis (1975), p. 292; DOX-PA 81, p. 29.
of life in the sprawling metropolis are reflected in his design of new sectors that mimic the historic city in scale. The attributes of the historic city contribute to the design of public space and the relationship of solids to voids in the sector. Public space is conceptualized and designed as a system, composed of interconnected paths, streets, courts, squares, plazas, esplanades, and other open spaces, all separated from vehicular traffic and charged with a range of housing types. Variety in the closely-knit public spaces and their scale correspond to that of the building volumes, and their coordinated interaction gives a fuller, more-satisfying articulation to the architectural space of the city. Unlike the modernist city, where void prevails, Doxiadis articulates a balance between solids and voids, favoring a low-rise city—but not a low-density city. This notion of urban design is derived from an analysis of the historic city, which mainstream modernism considered irrelevant and anti-model. It obviously retains its relevance, exhibiting concerns that Doxiadis shared with some of his contemporaries (such as Sert, Bacon, and Kahn) and anticipating the return of “history” as championed by Aldo Rossi and Colin Rowe (Mahsud 2010).

3.2.2 Multiple Scalarity

Conceptualizing a system based on interaction between the grid and the built-form by which to vary scales in urban settlement design is another hallmark of Doxiadis' urbanism. In the case of Islamabad, this is discernable through the integration of three infrastructures as spatial design grids or networks (see Figure 11): Eco or the green and blue (the preserved natural ravines forming the diagonal open space...
system), Social or the public space (the pedestrian network across the city), and Formal or the mobility (the 2,100-yards grid as mobility, utility, and green corridors). This three-way interaction and integration (see Figure 12) allows the overlapping of multiple scales (differing in function and size) of the metropolis, correlating the ordinary (housing) and extraordinary (civic, monumental) elements of the city, resulting in a kind of urban system that displays considerable coherence. Unlike the modernist city, in which zoning dominates, Doxiadis’ urbanism correlates different housing types through variation of size and texture of the building fabric. For example, the central core in Islamabad becomes more finely grained as it penetrates the residential sector.

Moreover, each building type is correlated with the others through the provision of common features such as courts, patios, and semi-covered areas, and their volumes correspond to the incremental increase in scale from the residential to the civic and monumental parts of the city (see Figure 13). A precise system of sizes and dimensions, determined through the use of a modulus, regulates the production of scale in both built-up and open spaces. Their coordination through the synthesis of levels of scale results in an enlarged design vocabulary, which is needed to ensure coherence at the metropolitan scale (Mahsud 2008) and in its regional setting.

3.2.3 Nature and the city: Rural-urban continuum and their interdependence

Owing to his belief that the “integration of nature and city enhances the citizen’s sense of well-being,” Doxiadis’ urbanism promotes their systematic integration. In the case of Islamabad, the use of an eco-grid as part of the public open-space system adds certain positive attributes: it brings nature into close proximity to the residential areas; produces ventilation corridors; adds variety to the architectural treatment of the metropolitan area; makes nature omnipresent and accessible within the city; and establishes a system of urbanization in which nature and infrastructure are interlocked in a framework that avoids garden suburbs and satellite towns. Combining the natural landscape’s topographical and ecological elements in a way that complements the system of open public spaces harmonizes landscape and townscape and yields the amelioration of local climatic conditions (Mahsud 2008). Such integration helps to secure the city’s economic future in an ecological way. Adhering neither to the earlier notion of green belts nor to the idea of skyscrapers situated in unarticulated open green spaces, this way of conceiving the city within the framework of nature and, more specifically, bringing nature inside the city, also breaks away from classical notions of urbanity.

3.2.4 Process design and open space system

the “plan as a process” and the “open space system as the focus of design” is discernable in the making of the plan (Mahsud 2008). These are necessary to achieve spatial coherence in the projected development of the metropolis, so that the aesthetic balance achieved in the early stages is not destroyed when additions are made. Doxiadis provided for the internal expansion of each element of the city (and for the addition of new elements) along separate axes (see Figure 14). The central axes, sector grids, and linear spines for specific housing types are the constant elements, while the content of the grid, degree of overlapping, and interpenetration of housing types are continuously subjected to feedback from the development of the previous sectors (DA 1960c; Botka 1995). This feedback process is
complemented by the focus of design on the open-space system embedded in the interlocking of formal, ecological and social grids. Their interlocking creates island-like spaces that are the site of building volumes, and are the locale of a range of programs and housing types, which creates a flexible framework for the coherent development of the metropolis. Such a framework based on process design and the precise articulation of the pattern of movement throughout the city-of people, machines, power, water, and other networks-within and in between buildings, and at various scales, allows absorbing change and transformations in a coherent way (see Figure 15). That is to say, the framework takes into account socio-spatial dynamics together with environmental concerns as integral parts of the process of urban development.

3.3 Rethinking the case for sustainable urbanism: Spatialising the dialectics of globalization and sustainability

Seen from a contemporary perspective, the reimagining of urban form in the case of Islamabad - and its subsequent iteration into global spatial concepts and development of Ekistics - illustrate the attempts to spatialize the dialectics of globalization and sustainability as a framework for design (Mahsud 2010). Rethinking the case of Islamabad through such a framework offers insights for the theoretical development of the discipline of sustainable urbanism. Such insights can be discussed in three ways: the four distinctive aspects as planning and design strategies up to the metropolitan scale; the harmonious co-existence of Ecumenopolis and Ecumenkepos as a framework for global spatial strategies; and interdisciplinarity and the proliferating urbanisms. The four distinctive aspects of the plan (section 2.2.1 – 2.2.4) can be seen as generic design and planning strategies for making a framework that facilitates the unfolding of coherent metropolitan growth over a period spanning as many as four to six generations. Seeing them together as synthesis making design strategies transcend the ‘one size fit all’ (compact or polycentric urban form) thinking that represents a major flaw in the theoretical structuration of the discipline of sustainable urbanism.
The global spatial concepts of Ecumenopolis (see Fig. 3 and 4) and Ecumenokepos, and their harmonious coexistence at various scales, as a framework allows to work towards generating design strategies and visions for sustainable urbanism. The strength and clarity of such a framework illustrates well the main issue of sustainability – the global ecological balance. However, one needs to be critical of the discourse such a framework generates. Behind this framework is an unusual combination of theory and practice named Ekistics, which aims at addressing issues of sustainability in a way that does not negate development (Mahsud 2008; Pyla 2002). Such an aim is fuelled by the ideological underpinnings of Doxiadis’ vision; he assumed, without specifying just how it would happen, that stimulating growth-based development through urbanism would diminish the gaps between developing and developed countries, and that their economic integration would transform the differences between East and West, capitalism and communism into some form of a global federalism (Bromley 2003). The urbanism that he promoted is a curious mix of pragmatism and idealism, a vision of what he called an anthropocentric Entopia (see Fig. 9). Neither successful practice, nor utopia, nor dystopia, Entopia (in place) was the benign face of his urbanism. Entopia is thus a middle ground promoting what Doxiadis believed was feasible: a universal democratic society consisting of communities that are not aggregations of structures and infrastructures but rather organic human settlements capable of growth and change (Winnick 1989). Such a society ought to have freedom of choice. This implies replacing the production of definitive plans for cities all at once by flexible and adaptable frameworks whose designs are informed by a more-complex understanding of the interrelationships of the elements, forces and processes involved in urban development (Mahsud 2011b).

On the one hand, Doxiadis’ urbanism attempts to link process
design (feedback and local knowledge) and infrastructure (economic, social, and formal) (see 2.2.4) as local socio-spatial and environmental concerns—sustainability avant la lettre. On the other hand, his urbanism is a vehicle for structuring urbanization and fostering urban development in the interest of stimulating global socio-economic growth and development. Doxiadis’ urbanism, then, resolves the often mutually incompatible impulses of sustainability and globalization into a dialectical framework that informs his design practice (Mahsud 2010). Such a framework, even if it takes the form of a “master” plan, produces a provisional synthesis of nature and infrastructure within which the building volumes and open spaces develop in a way that attempts to ensure the dynamic coexistence of nature, culture, and ecology. This is a synthesis in which open space and the built environment, the local and the global, the historic and the modern, the process and the end state are all continuously interacting. In short, such a synthesis deals simultaneously and coherently with the speed of and the ease of development.

Rethinking Doxiadis’ urbanism through the dialectical framework of globalization and sustainability potentially offers insights into how to deal with “spontaneous” urbanization and urban sprawl, and in how to build a greater awareness of environmental and development concerns. The interdisciplinarity—combining architecture, landscape, ecology, land use, geography, urban and regional planning—and spatial logic based precisely articulated framework for urban design synthesis is a response to facilitate a coherent urbanization process. In its attempts to reconcile global development and local cultures, Doxiadis’ urbanism unfolds an awareness of sustainability as a major factor, not just an after-thought. Such awareness is different from mainstream modernism and the contemporary “bio-centric polemics” and from “corporate brand” notions of sustainability governed by economic criteria (Pyla 2002). Rather, Doxiadis’ urbanism analyses of the spatial dimension of development and environmental protection in a way leads to the vision of a parallel coexistence of Ecumenopolis and Ecumenokepos and their coordinated action. This pairing, besides stimulating significant ideas such as global ecological balance and the carrying capacity of systems, brought the global ecological balance and the carrying capacity of systems, brough the global ecosystem to the forefront as teh ultimate framework for urbanism.\(^\text{13}\) Renewed optimism in the possibilities of such a framework resonates in current trends such as ‘Landscape Urbanism’, ‘New Urbanism’, and other ‘Green’ design agendas. Simultaneously ameliorative, reconciliatory, and regenerative, Doxiadis’ complex and dynamic framework offers many more urban and environmental design strategies to generate alternative yet broadly relevant forms of development.

4. THE NEXT FIFTY YEARS?\(^\text{14}\)

Towards a sustainable metropolis of the future: Urban Design and Policy Recommendations

In contrast to the insights and potential contribution of the historical making of the plan and its spatial articulation, its materialization through implementation over the last five decades has unfolded serious shortcomings from the sustainability perspective. These shortcomings can be grouped into six broad areas of concern. Some of them are well known facts, others based on empirical evidence, analyses presented in the previous sections and research by design. They are also supported by observations through my participation in the several master plan and urban design review processes and practice in the context of Islamabad spanning over the last decade and a half. First and foremost is the fact that Islamabad is the only city in Pakistan that does not have an elected representative municipality. It is still governed in the same technocratic, bureaucratic and authoritarian way by the CDA (Capital Development Authority) that was constituted in 1960 as a successor of the FCC (Federal Capital Commission). Despite some attempts through civil society activism and media campaigns, there is in-sufficient realization that the bureaucratic mandate of the ‘authority’ (CDA) for development is over and that the city needs to be entrusted to its citizens and civilian representatives for governance. This is a big hurdle in the way towards ‘democratic governance’, ‘public participation’ and ‘social inclusion’ that are the main policy imperatives and a must for the unfolding of a sustainable metropolis of the future (see 4.2 below). Second, and most importantly, is the abandoning of the metropolitan framework of the original plan i.e. separation of Rawalpindi and isolating Islamabad from its regional dimension and related developments in the hinterland. Third is the complete disregard in the design of the sector that was based on

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\(^\text{13}\) For global ecological balance and carrying capacity of systems, see Roderick (2001) and Wackernagel (1996).

\(^\text{14}\) These design and policy recommendations were first presented at the occasion of the 50th anniversary of Islamabad—an event organized by IAP Rawalpindi Islamabad chapter in 2011. They represent a thematic way of working towards sustainable built environments. Their thematic development owes to the Author’s work in collaboration with Social polis (FP-7) team under the guidance of prof. Frank Moulart in the research project of ‘prospective urbaine’ / exploring urban futures in European cities [see Mahsud 2011c].
Taking into account the variety of these challenges - together with the theoretical and empirical analyses, arguments, and sustainability prospects of the plan identified as the distinctive design aspects in the preceding two sections - the main aim of the design and policy recommendations is to provide a framework for developing an ‘Integrated Metropolitan Plan’ (IMP) for Islamabad-Rawalpindi Region. With somewhat pragmatic leaning, they are organized under four flags (3.1-3.4), which represent a thematic reflection on integrated ways (Malsud 2011c) of working towards a sustainable metropolis of the future. Their transversal dimensions include the following:

- **Policy imperatives:** Based on an extensive survey of sustainability literature, ‘Social Cohesion’, ‘Environmental Sustainability’ and ‘Democratic Governance’ come to the fore as complementary policy imperatives. Their complementarity is needed to ensure the provision of social services for all, including livability, efficiency in transportation networks, reducing environmental problems, minimizing resource use and waste generation, assuring water and energy services for all, and active citizenship and participation in urban management.

- **Dynamic density:** Development of an urban design based dynamic density model for the Rawalpindi-Islamabad metropolitan area should be seen as a way of absorbing future population growth, and securing the socio-economic base of the metropolis. The model implies that all sectors [present and those that are part of the original master plan] should be allowed to have a range of 60,000 to 100,000 inhabitants (200 – 335 persons / hectare). The densities in Rawalpindi Central and Blue areas should obviously be 2 to 3 times that range. With such levels of density allowance, 8 – 10 million inhabitants can be accommodated within the original master plan urban area, which implies the unfolding of tremendous socio-economic opportunities in the metropolis. Achieving this gross density of 200 p / ha is essential for a minimum sufficient tax-base to finance and maintain an efficient modern multi-modal metropolitan public transport system – an absolute must for a sustainable metropolis. Allowing the increased densities within urban area, generating more facilitated and affordable urban housing space for new comers, is also the only way to relieve the national park and other surrounding areas from the alarming pressures of urban sprawl. An integrated participative approach to the preservation and protection of ecological resource (Margalla Hills, national park, naadas inside the urban area, Soan river park, etc.) is also an absolute must for unfolding the sustainable metropolis of the future.

4.1 Re-orienting architecture, urban design and planning toward sustainable development

An integrated approach towards a sustainable metropolis of the future requires reorientation of the current modes (both academic / curricula and practice) of architecture, urban design and planning towards ‘socio-spatial cohesion’ and ‘environmental sustainability’ at multiple scale levels. The recommendations include the encouragement, promotion and integration of the following in the educational curricula and professional practice:

- **Eco and energy efficient, mixed-use/ tenures/houses-types, compact, human-scaled, low-rise and high-density architecture, urban design and development.**
- **Creating, connecting and preserving public space [from street, neighborhood to regional scales], so that it becomes a main vector in the articulation of social life.**
- **Sustainable mobility through walk-able neighborhoods and multi-modal mobility networks (that allow integration of public transport, walking, cycling and reduction of car use).**
- **Sustainable land-use and settlement patterns through better coordination between transport, land use, open space planning with environmental controls, high standards of management and preservation of green and blue networks.**
- **Promoting participatory design and planning methods as well as capacity building methods to involve a diversity of actors.**
- **Progressive shift towards a more human-powered and...**
less resource-intensive buildings and site design as the core of all architecture and urban design curricula.

4.2 Working towards democratic, efficient and multi-level Metropolitan Governance

An integrated approach towards sustainable metropolis requires citizenship-building, collective responsibility and reinventing access to social services through social innovation. They are transversal for working towards a metropolitan governance system that guarantees a sustainable future. In this regard, the main recommendation is the dismantling of CDA in favor of a democratically elected multi-level metropolitan governance system. Following are the core dimensions for shaping the process of working towards such a system:

- Governance and new forms of institutions: Multi-level governance should in particular aim at enhancing the capacity of the local bodies (neighborhood, city level administrations, union councils, etc.), developing new forms of institutional settings (for coordination of actors and interests) and public-private partnerships in tackling metropolitan challenges in ways that accommodate more inclusive forms of socio-economic development. The new forms of civic and social mobilization and local social capital formation should be seen as strategies for coping with the negative consequences of urban restructuring and changes in roles, positions, and scales of urban ‘governance’.

- Active citizenship and the right to the city: Advancing towards a scale-sensitive and inhabitant-centered conception of citizenship that requires active participation for guaranteed rights. This implies linking participation with concrete improvements in living conditions, and harnessing the potential of the often-neglected ‘voluntary’, ‘private’ and ‘informal’ sectors for common deliberation, mutual learning processes that leads to a broader vision of urban development and the creation of a sense of solidarity.

4.3 Working towards an Ecological Metropolis

This implies the transformation of the social-natural-technological assemblages of urban life in ways that help build socio-environmental justice whilst reducing the risks of biodiversity collapse, neo-liberal globalization and climate change. The recommendations include the following:

- Joint public-private investments in the “greening” of public infrastructure, building stock and production processes, renewable energy, ensuring urban biodiversity and food security, exploiting new ‘green’ technologies and building new industrial sectors. They should be seen as a huge domain for urban innovations and employment generation.

- Linking the processes of social exclusion with issues of ecological justice and increased awareness of socio-ecological issues through social participation at the local level (e.g. schools, media, NGOs, firms, city-wide events, etc.) to initiate a bottom linked transition management towards ecological resilience of processes underpinning city life in ways that reduce carbon footprints.

4.4 Working towards an Educational and Participatory Metropolis

Free and fair accessibility to quality education, socio-ethnic sensitivity in the location of schools and modes of education that promote life long learning for all are critical factors in working towards the educational metropolis. The recommendations include the following:

- Appropriate mechanism should be established for the promotion of an “open-up” educational model based on a pedagogical system that places the emphasis on learning rather than on teaching and also reinforces values such as: autonomy, responsibility and cooperation. This involves several interrelated shifts towards focus on work – learning, policy-learning, learning in and from the city, development of mutual and multi-generational learning places, and increased public-private partnerships and investment in civic centers and libraries projects.

- Building pro-cosmopolitan politics of identity in the metropolis through ensuring the accessibility to the social services (education, health, training, jobs, etc.) for all ethnicities, social and income groups and particularly the involvement of the local voluntary and community sector in the process.

Promoting the creative use of digital infrastructure for enhancing community life and active citizenship including: accessibility to social resources and welfare; improve social interaction across social classes and age groups; re-connect places and to reinforce the sense of community; and to revitalize both the street and the sector levels in unfolding the larger cohesive metropolitan environment.
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